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DATE 18Feb94

PLEASE DELIVER TO OR NOTIFY Diana Newman

ORGANIZATION/LOCATION EPA

FROM Robb Long

ORGANIZATION/LOCATION PNO

REMARKS Revisions / Comments on WLL Submittal #2

NUMBER OF PAGES TO FOLLOW 3

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West Lake Landfill
MOD079900932
3.4
comments
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TABLE 5-1

PRELIMINARY REMEDIAL ACTION OBJECTIVES

Media	Potential Areas Requiring Response	Contaminants of Concern	Preliminary Remedial Action Objectives
Soils	The Site and adjacent property	See groundwater	Control migration of soil contaminants which would result in exposure or groundwater concentrations in excess of ARARs or that pose unacceptable risk
Erosional Sediment	Surface water run-off areas on and adjacent to the Site	See groundwater	Control release of contaminated sediment or ~~contaminants~~ from sediments that would result in exposure or surface water concentrations in excess of chemical-specific ARARs or that pose unacceptable risk
Groundwater	The Site and areas downgradient	Radionuclides, Organic chemicals, and Inorganic chemicals	Control the ~~release~~ migration of ~~contaminants that would result~~ drinking water, irrigation water in concentrations in groundwater or surface waters in excess of ARARs or that pose unacceptable risk
Air	At perimeter of the Site	Radon, and Radioactive particles	Control the release of contaminants to the air in concentrations that would exceed ARARs or pose unacceptable risk

TABLE 5-2

INITIAL PRGs FOR CHEMICALS OF CONCERN

Contaminant	Toxicity Values				Preliminary Remediation Goals (PRGs)	
	oSF 1/(mg/kg-d)	oRfD (mg/kg-d)	iSF 1/(mg/kg-d)	iRfD (mg/kg-d)	Industrial Soil (mg/kg)	Tap Water (µg/l)
Endrin		0.0003		0.0003	610 nc	**0.2 MDWR**
(HCH gamma) Lindane	1 3	0 0003	1 3	0 0003	4 ca	**4 MDWR**

Contaminant	Toxicity Values				Preliminary Remediation Goals (PRGs)	
	oSF risk/pCi	iSF risk/pCi	eSF risk/pCi	VF m^3/kg	Industrial Soil pCi/g	Tap Water pCi/l
Radionuclides						
Ra 226	1.2×10^{-10}	3.0×10^{-9}	6×10^{-6}	8	6×10^{-8}	**5 MCL**
Th-230	1.3×10^{-11}	2.9×10^{-8}	5.4×10^{-11}	0	0 006	0.0004
U 234	1.6×10^{-11}	2.6×10^{-8}	3.0×10^{-11}	0	0 01	0 0005
U 235	1.6×10^{-11}	2.5×10^{-8}	2.4×10^{-7}	0	1×10^{-6}	0 0005
U-238	2.8×10^{-11}	5.2×10^{-8}	3.6×10^{-8}	0	9×10^{-6}	0 0002

Notes ~~Radium daughters~~ ?

very low — will require very long count times to validate presence at these levels

PRGs in bold based on indicated chemical specific ARARs

MDNR -	Missouri Department of Natural Resources
MCL	Maximum Contaminant Level - Safe Drinking Water Act
MWQS	Missouri Water Quality Standard
MDWR	Missouri Drinking Water Regulations
oSF	Oral Cancer Slope Factor
iSF	Inhaled Cancer Slope Factor
eSF	External Exposure Cancer Slope Factor (Radionuclides)
oRfD	Oral Reference Dose
iRfD	Inhaled Reference Dose
VF	Radionuclide-specific soil-to-air volatilization factor
ca	PRG based on cancer effect.
nc	PRG based on non-cancer effects
max	PRG based on maximum concentration limit
NA	Chemical not a health-based concern but a potential indicator of contaminated media

Groundwater is present within the valley alluvium and the underlying limestone bedrock Based on available data, both of these water-bearing units are under unconfined aquifer conditions. Groundwater in the alluvium generally occurs at a depth of 10 feet or less below the natural ground surface The alluvium is fully saturated from the top of groundwater surface to the top of the underlying limestone There is no confining bed present along the contact with the underlying limestone

Limited groundwater is present within the limestone bedrock In the southern portion of the Site the groundwater present originates from surface water infiltration from the overlying loess. Within the central and northern portion of the Site, the groundwater originates primarily from the overlying alluvial aquifer Water levels in deep wells which are completed within the upper portion of the limestone bedrock generally have water level elevations which are hydrostatically similar or slightly lower than the adjacent shallow and intermediate depth monitoring wells

The alluvium has a high hydraulic conductivity, especially in the lower portion of the aquifer where sands and gravels predominate The hydraulic conductivity of the limestone bedrock is significantly less than the alluvium, and is expected to be several orders of magnitude lower Groundwater flow within the limestone is essentially limited to open fractures and along bedding planes as evidenced by visual evaluation of the exposed limestone in the quarry walls Karst solution features are limited to the upper portion of the limestone and their influence on groundwater flow is therefore limited

Groundwater elevations vary on a seasonal basis and generally, fluctuate between elevations of 430 and 438 feet MSL Water level rises are associated with periods of high precipitation Coincident with the precipitation is a rise in the Missouri River stage Figure 3-9 illustrates the general similarity of the Missouri River stage and groundwater elevations in selected monitoring wells Appendix D lists the daily river stage data for the St Charles gauging station for the years 1970 through 1992

The overall groundwater flow direction beneath the Site is to the northwest Figures 3 10 through 3-15 present groundwater contour maps for data collected on March 30 1985 and August 8, 1985, for the shallow, intermediate, and deep monitoring wells Groundwater contour data show essentially the same overall pattern within all three well completion depths Water level data for individual wells are included in Appendix E

Review of the groundwater contour maps shows that a groundwater trough is present beneath the Site This trough is oriented in a northwesterly direction Groundwater flow is directed towards the center of the property and exits on the north beneath Area 2

There are several possible explanations for the groundwater trough Two likely explanations are as follows

- Drainage ditches and ponds surround the perimeter of the property It is possible that these surface water bodies are recharging groundwater If groundwater recharge mounds are present beneath these features, then ~~you~~ one would expect a groundwater trough similar to that observed